

DEPARTMENT OF ENVIRONMENTAL QUALITY Environmental Assessment

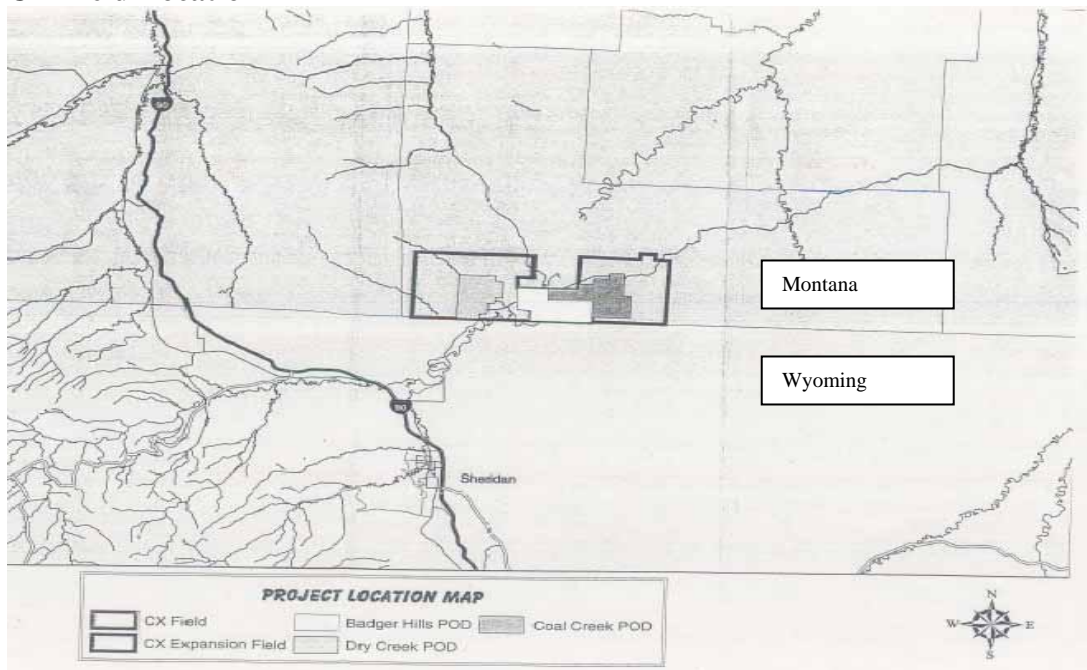
Permitting and Compliance Division Water Protection Bureau

Name of Project: Fidelity Exploration and Production Company, Tongue River Project

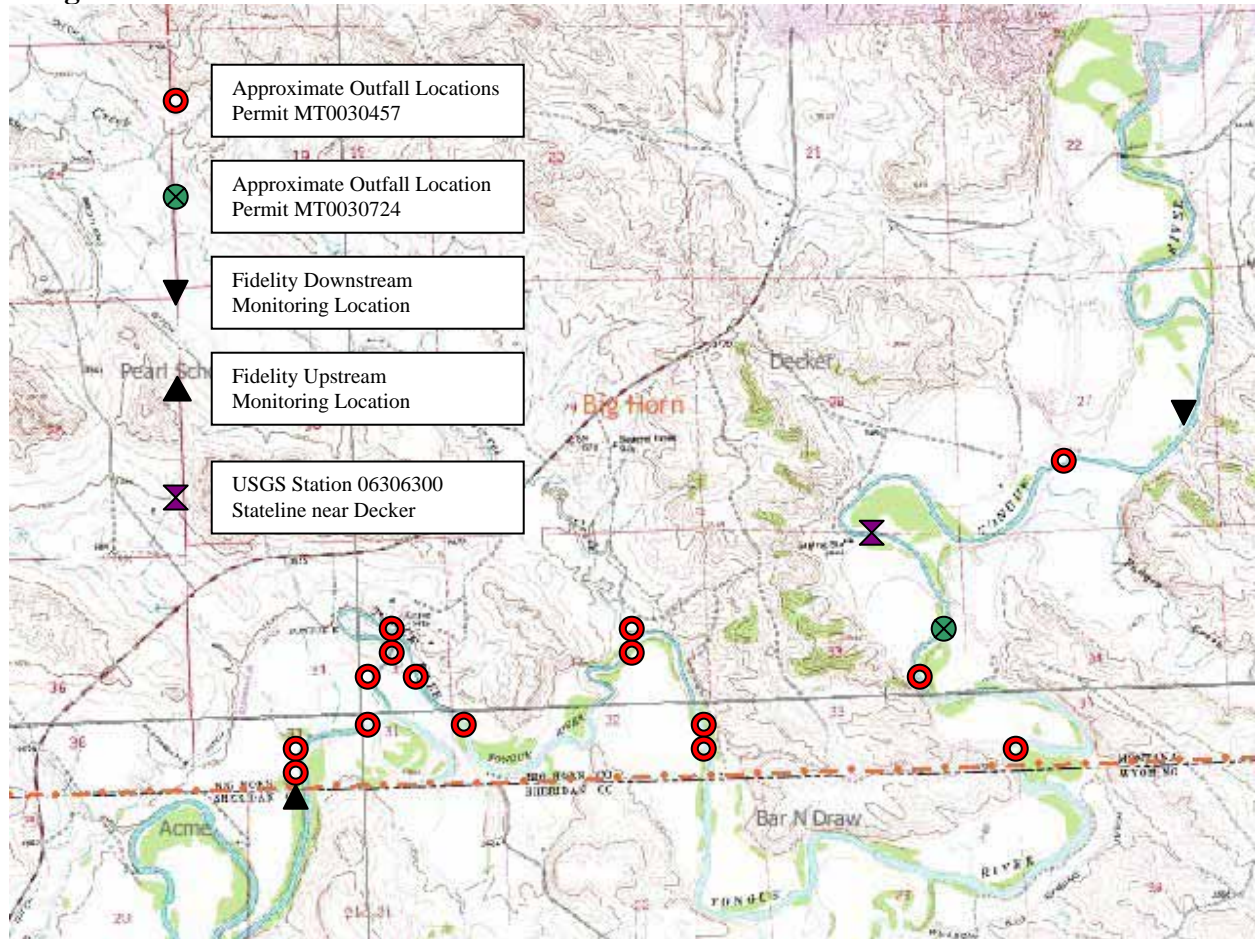
Type of Project: The applicant is engaged in developing and extracting coal bed natural gas (CBNG) from subsurface formations in the Powder River Basin. This process generates excess water, which is considered wastewater and must be disposed of through various methods including direct discharge to state surface waters. The applicant proposes to treat a portion of this produced water prior to discharge; with the remainder of the wastewater to be discharged without treatment. The applicant proposes to discharge both treated and untreated wastewater to state surface waters under the terms and conditions of Montana Pollutant Discharge Elimination System (MPDES) permits.

Location of Project: The Tongue River Project encompasses all of the following approved Project Plans of Development (PODs): CX Ranch, Badger Hills, Coal Creek, and Dry Creek within the CX Field. The scope of this action entails all or parts of the following townships: T9S R39E, T9S R40E, and T9S R41E. Discharges from the project will enter the Tongue River via 16 existing outfalls spread from river mile 224.1 to 213.5; from the initial crossing of the Montana state line by the Tongue River to approximately two miles upstream from the Otter Road crossing.

CX Field Location



Tongue River Outfall Locations



City/Town: Decker

County: Bighorn

Description of Project: The applicant, Fidelity Exploration and Production Company, a Denver based energy development company, is the operator of the coal bed natural gas CX Field. The CX Field includes the following project plans of development: CX Ranch POD, Badger Hills POD, Coal Creek POD, and the Dry Creek POD. Under approval from the BLM, and the Montana Board of Oil and Gas Conservation (BOGC), the operator has 437 producing wells and 234 wells that have been approved but have yet to be drilled.

Water Management Plans

The applicant has developed water management plans which identify disposal methods for produced water from CBNG extraction. The operator has applied for MPDES permits to discharge produced water from production activities to surface waters. The Final Statewide Oil and Gas, Environmental Impact Statement, January 2003(MT-FEIS), analysis concluded that 20% of the produced water from CBNG production should go to beneficial uses. The operator

has identified beneficial uses of produced water for industrial consumption, livestock watering, and managed irrigation.

MPDES Permit MT0030457

The DEQ Water Protection Bureau issued a discharge permit (MT0030457) in June 2001 to Fidelity to discharge produced water to the Tongue River. The initial permit development utilized the requirements for new sources and new dischargers as identified in the Montana Water Quality Act and companion regulations. Regulations in place at that time required the discharge to be nonsignificant under the nondegradation language and the Molloy decision concerning implementation of TMDLs to state waters. The permit was developed and limited flows to the Tongue River in order to meet the nonsignificance requirements on a year around basis.

The permittee proposed a flow based approach, in which discharges could be varied on a daily basis; being dependant on the receiving water flow. The draft permit that the Department developed, allows for a seasonal approach to the flow based rationale. This approach was undertaken because of two factors. Firstly, the uncertainty associated with the dynamic model used to develop the application. Secondly, the uncertainty of developing enforceable permit limitations based on a daily flow determination.

The draft permit stipulates seasonal discharge flows based on the USGS seasonal 7Q10 flow analysis. To determine a net effect of the discharges on the receiving water, all discharges were analyzed together as a point source to the receiving water, not as discrete outfalls throughout the river reach. This conservative approach builds in additional protection to the receiving water. See the Fact Sheet for permit MT0030457 for a discussion concerning permitting decisions and methodology.

Baseline receiving water quality has been developed utilizing data from USGS operations in the Tongue River watershed and MPDES requirements for instream monitoring. Data has been compiled from stations located at Tongue River at Stateline near Decker, Tongue River at Monarch WY, Goose Creek below Sheridan WY, Prairie Dog Creek near Acton WY, and monitoring activities conducted by Fidelity in the Tongue River upstream from their outfalls and Prairie Dog Creek in WY. All data collected from monitoring activities prior to June 2000 was used to create the baseline conditions. In addition, daily flow statistics from all stations were used to develop a flow proportioned, composite ambient quality for the receiving water. The resulting ambient water quality was sorted into seasonal, and, for a majority of cases, monthly ambient quality.

The Tongue River in the areas of the proposed discharges, is listed as impaired for aquatic life support, and cold-water fishery for trout in the 1996 303(d) list. The probable cause is flow alteration. The probable sources are agriculture, flow regulation and/or modification and irrigated crop production. The Tongue River in the location of the proposed discharge has been removed from the 2000, 2002, and 2004, 303(d) lists based on reassessment of the water quality.

Additional analysis has been conducted at the annual 7Q10 flow rate and conditions expected to occur during low flow periods in the cumulative analysis requirement. Based on this analysis, the permit requires reduction in discharge flows if the receiving water instream flow is less than the annual 7Q10 and the instream electrical conductivity exceeds the instantaneous maximum standard for the receiving water.

MPDES Permit MT0030724

The Department received an application for a new discharge source to manage produced water from the CX Field. The application proposed to treat produced water with an ion exchange process to reduce the total dissolved solids, mainly sodium, to reduce the sodium adsorption ratio (SAR). SAR is a measure that defines the waters' ability to be adsorbed into the soils. The application requested a treatment scenario allowing blending, that is based on the receiving water flow rate and water quality. The Department chose to develop seasonal flow- based limits for the reasons stated above. The draft permit allows blending of raw produced water with the treated water with limitations to prevent exceedances of the standards in the receiving water.

The draft permit utilizes nondegradation criteria to establish limitations. Limits have been established for the following parameters: total suspended solids, total nitrogen, sodium adsorption ratio, electrical conductivity, temperature, blending, and flow. Ambient conditions used in the calculations were the same as the baseline receiving water conditions used above. For a detailed accounting of rationale and methodology used during the permit development, review the statement of basis for permit MT0030724.

Beneficial Uses of Produced Water

The operator has filed for and has received conditional use water rights for produced water to be used for beneficial uses. Currently the operator transports produced water via pipeline to both the Spring Creek Mine and the Decker West Mine. The operator has entered into a conservation easement with the Department of Natural Resources and Conservation (DNRC) and Decker Coal Mine. This agreement allows for CBNG production on Decker property, but prevents discharge of produced water to the river from the 31 wells located on their property. This water is pumped back to the Decker mine for internal consumption. Produced water delivered to the mine sites is used for dust suppression and industrial use. Produced water is not discharged from the facilities because it is internally consumed.

Contiguous to the produced water pipelines, the operator has constructed stock tanks. These stock tanks are authorized by the Department to minimize or eliminate the discharge of produced water from livestock watering tanks.

The operator is also exploring the feasibility of conducting managed irrigation practices. By chemically amending the soils, produced water can be used for irrigation. Should the operator decide to utilize this option, a managed irrigation plan and storage facilities would be required to impound produced water during the non-irrigation season.

Agency Action and Applicable Regulations: The proposed action is to issue two MPDES permits to the applicant for discharge of treated and untreated wastewater. The permits specify effluent limitations, waste disposal requirements, and monitoring requirements. The Department is issuing these permits under the authority of the Montana Water Quality Act 75-5-101 *et seq.* MCA, and the Montana Pollutant Discharge Elimination System rules, ARM 17.30.12 *et seq.* Permit limitations have been developed utilizing the nondegradation provisions of the Water Quality Act at § 75-5-303 MCA, and rules at ARM 17.30.701 *et seq.*

The Department has conducted additional analysis of the project and has issued 18 air quality or operating permits under 75-5-217 and 218 MCA *et seq.* and ARM 17.8.12 *et seq.* The storm water program has issued the following authorizations: MTR100803, MTR100816, MTR100821, MTR100853, and MTR101240 for control of sedimentation from construction activities.

The US Corps of Engineers has issued three Section 404 Clean Water Act permits to the operator: 200190238, 200190111, and 200390095. The Big Horn Conservation District has issued a *Stream Bed and Land Presentation Act* (310 Permit) #2003-4 for the existing outfall structures.

For the purpose of this environmental assessment (EA), the Department will only be analyzing impacts from the proposed project, and the cumulative impacts associated with existing approved PODs. Joint agency EAs have been developed by the BLM, BOGC, and the DEQ for the following PODs: Badger Hills w/amendments February 2004, Dry Creek February 2004, and Coal Creek January 2005. Impacts to the environment and human population will be drawn from these EAs. Cumulative impacts to the receiving water have been analyzed and presented in another section of this EA. In addition, the Final Statewide Oil and Gas, Environmental Impact Statement, January 2003(MT-FEIS) will be used to establish general objectives and mitigation measures within the Powder River Basin in Montana.

Summary of Issues: The Department proposed to issue MPDES permits to limit the discharge of produced water from CBNG development to the Tongue River. Issues of concern include: impacts to air quality, cultural resources, ground and surface water quality and quantity, threatened and endangered wildlife and vascular species, and impacts to the human environment.

Affected Environment & Impacts of the Proposed Project:

Y = Impacts may occur (explain under Potential Impacts). *Include frequency, duration (long or short term), magnitude, and context for any significant impacts identified. Reference other permit analyses when appropriate (ex: statement of basis). Address significant impacts related to substantive issues and concerns. Identify reasonable feasible mitigation measures (before and after) where significant impacts cannot be avoided and note any irreversible or irretrievable impacts. Include background information on affected environment if necessary to discussion.*

N = Not present or No Impact will likely occur. *Use negative declarations where appropriate (wetlands, T&E, Cultural Resources).*

IMPACTS ON THE PHYSICAL ENVIRONMENT	
RESOURCE	[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES
1. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE: Are soils present which are fragile, erosive, susceptible to compaction, or unstable? Are there unusual or unstable geologic features? Are there special reclamation considerations?	<p>[N] Soil survey for the Tongue River Project is based on the <i>Soil Survey of Big Horn County Area, Montana</i>, (USDA 1977). Within the project area soils have developed from alluvium and residuum derived from the Tongue River Member of the Tertiary Fort Union Formation and Eocene Wasatch Formation. Lithology consists of siltstone, sandstones, and coal seams within a matrix of shale. Soils identified in the project plans of development, indicate numerous soil types within the project area. Textures range from clay to gravelly loam; permeability ranges from 0.06 to 6.0 in/hr; erosion hazard ranges from slight to excessive.</p> <p>Topography of the area is characterized by gently sloping valleys bounded by ridges capped by frequent sandstone and clinker. Elevations range from 3400 to 4400 feet above mean sea level. Topography will not be impacted by construction related activities except within road or pipeline corridors. Road building activities will be limited by concurrent reclamation to minimize any effect.</p> <p>A summary of reclamation practices is available in each POD within the project area (Fidelity, Apr. 2004, Mar. 2004 and Jun. 2003). Mitigation measures have been identified and implemented under the surface reclamation plans within the individual EAs (BLM, Dec. 2004, Feb. 2005, and Feb. 2004). Any additional disturbances will be required to adhere to the terms and conditions contained within the POD and EAs. All mitigation measures are either a result of the impact analysis or adopted from the MT-FEIS, 2003. Soils will not be impacted by the issuance of the MPDES permits unless managed irrigation is utilized as a disposal option.</p>
2. WATER QUALITY, QUANTITY AND DISTRIBUTION: Are important surface or groundwater resources present? Is there potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality?	<p>[Y]Groundwater</p> <p>The Montana Final Statewide Oil and Gas Environmental Impact Statement and Proposed Amendment of the Powder River and Billings Resource Management Plans (MT-FEIS) Chapter 4- Hydrological Resources, has determined that there will be impacts to the ground water from CBNG production. Ground water impacts associated with the preferred alternative in the MT-FEIS focus on drawdown of the aquifer(s) from the edge of the CBNG field production, and the potential for CBNG produced water (untreated) to infiltrate through the more permeable shallow sub-soils and alter the quality of alluvial ground water.</p> <p>Actual findings after four (4) years of CBNG production from the CX Field, indicate ground water levels have been lowered 20 feet from one to two miles outside the production area. Within the CBNG production area, ground water levels are as much as 150 feet lower than baseline conditions. According to ground water modeling where drawdown is held constant and the discharge rate varied, after 20 years of CBNG production a drawdown of 20 feet was calculated to extend four or more miles outside the producing fields, even</p>

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considering the physical characteristics of each coal bed may vary widely. Physical characteristics of coal aquifers are site-specific for each field and include hydraulic conductivity, saturated thickness, proximity to the outcrop, and the starting/baseline hydrostatic pressure in the coal bed.

With the ground water levels reduced/lowered, there will be a loss of ground water resources. Some springs and supply wells that are sourced from the producing coal beds may experience a reduced water availability. Streams that receive significant portions of their flow from ground water discharge from coal beds that subcrop beneath and recharge the alluvium may decline due to the loss of ground water base flow. In larger surface water bodies this impact may not be measurable. CBM production from the Dietz coal has caused changes in the stage of the Tongue River reservoir due to the drawdown of the Dietz coal beds beneath the reservoir increasing leakage from the reservoir. This particular leakage situation may also be detrimental to CBNG production because water that is not under reduced conditions may migrate into the CBNG field(s), converting methane to carbon dioxide. Gas field development designs will be adjusted to fit specific local aquifer characteristics and stratigraphy (Wheaton and Donato, 2004).

Mitigation agreements are required by the State and the BLM to be offered to the owner of any spring or well adversely impacted by CBNG production. The agreements include water wells or natural springs within one mile of CBNG production, or within the area that the operator reasonably believes may be impacted by CBNG production, whichever is greater, and to extend this area one-half mile beyond any well adversely impacted. These agreements will apply whether the impacts are due to reduced yield, the production of methane (methane migration), or a change in water quality. Ground water levels in overlying and underlying aquifers (sandstones) are expected to show little response to drawdown from CBNG production due to shale dominated stratigraphic sequences. However, the Order [No. 99-99 (Controlled Ground Water Area)] requiring mitigation agreements applies to "all" wells and springs, not just those which derive their water from the developed coal seam(s). Water rights are presently being adjudicated on a watershed basis (BLM, 2004 and 2005).

Impacts to soils and surface water resources may be caused by the inappropriate disposal of CBNG produced water. Required water management practices will address quantity and quality of the water released. Individual CBNG well discharge rates may be influenced by factors such as the time since pumping began, the size of the well field, the position in the field, and the aquifer characteristics of the particular coal. CBNG produced water discharge rates range from 20 gallons per minute (gpm) per producing well at start-up, and may decline to approximately 1 gpm after 10 years of production. Produced CBNG water in Montana is dominated by sodium [according to the sodium adsorption ratio (SAR)] and bicarbonate ions. SARs range from over 30 to 70 (unitless). Calculated dissolved solids (CDS) are greater than 1,000 mg/L to less than 2,000 mg/L (Wheaton and Donato, 2004).

Ground water monitoring by the MBMG and the BLM began in the 1970's in

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association with coal mining in this area. For CBNG ground water monitoring, nests of monitoring wells will be used to track drawdown of multiple producing coal seams. The USGS is also installing six (6) well clusters along the southern boundary of the Northern Cheyenne Reservation to track drawdown effects from CBNG development east of the CX Ranch and nearby areas. The BLM is also installing ground water monitoring well clusters throughout the Montana portion of the Powder River Basin, including areas adjacent to the Northern Cheyenne and Crow Reservations. Currently, monitoring wells are in place outside the producing field to monitor regional impacts such as the magnitude of drawdown, and the rates and extent of vertical leakage (BLM, 2004 and 2005).

[N]Surface Water

As stated in the MT-FEIS, surface water quality would be slightly altered, however, downstream uses would not be diminished. Surface water flow would be moderately increased causing some riparian erosion, as well as increased sedimentation. Under the preferred alternative, beneficial reuse would be emphasized. For each POD, a water management plan (WMP) would be required. Contained in the WMP, the applicant would identify options including: injection, treatment, impoundment, direct discharge, or any other operator proposed disposal method. The WMP must address both site-specific conditions and cumulative effects of the proposed management and their effects on soil, water, vegetation, wildlife, stream channel stability and any other resources reasonably expected to be impacted. The WMP must be submitted with the POD and require approval prior to issuance of approvals for Applications for Permit to Drill. Analysis conducted in the MT-FEIS concludes there would be no impact to beneficial uses under the preferred alternative.

The operator has submitted WMPs for the Badger Hills, Coal Creek, and Dry Creek PODs. Each POD identifies and analyzes the following areas: Geographic setting, Geology, Existing, Planned and Potential discharges, Water rights, Watershed characteristics, Hydrologic watershed analysis, Groundwater quality, Facility design, Downstream impacts, and Monitoring and mitigation (Fidelity 2003, 2004). WMPs identify direct discharge, treatment and discharge, beneficial uses (industrial water supply and stock watering), impoundments and managed irrigation as discharge options. Cumulative impact analysis contained in the WMPs show that the mixed water quality will not exceed Montana numeric water quality standards in the Tongue River.

Environmental Assessments prepared by the BLM, BOGC and the DEQ (BLM Feb. 2004, Dec. 2004 and Feb. 2005) have approved WMP with conditions. Conditions of approval require the operator to conduct additional monitoring and analysis to prevent additional impacts to the surface or groundwater. Should the operator fail to meet MPDES permit limitations, the BLM requires all discharges to cease until the operator has modified the WMP. Once the WMP is modified and approved, the discharges may continue.

Cumulative impacts to the Tongue River have been modeled and analyzed. The model accounts for baseline ambient water quality and all discharges to the Tongue River system. Within the river reaches, a mass based model was

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	<p>utilized to predict receiving water quality. In the Tongue River Reservoir, the historic net effect through the reservoir was used to predict future reservoir behavior. Receiving water analysis was conducted at annual 7Q10 flows and at the seasonal 7Q10 flows developed in the MPDES permits. Electrical conductivity (EC) was the only parameter to exceed the 30-day average limitation. Exceedances occurred at the seasonal 7Q10 flow periods in the upper Tongue River near Decker. To prevent exceedances of the daily maximum limit, the permit required daily monitoring during times in which instream flows are less than the seasonal 7Q10. If the instream monitoring demonstrates EC values greater than the daily maximum EC limit, the operator will be required to reduce produced water flows until the resulting instream EC values are reduced to reach a maximum below the daily maximum limitation. Cumulative SAR values in the Tongue River at Birney reached a maximum at 1.98 during the annual 7Q10 flows in April. See Attachment 2, for the complete cumulative impact analysis.</p>
<p>3. AIR QUALITY: Will pollutants or particulate be produced? Is the project influenced by air quality regulations or zones (Class I airshed)?</p>	<p>[N] An Air emissions inventory has been completed by the Department's Air Resources Management Bureau (ARMB) for each POD submitted for approval. The ARMB determined that air quality permits were not required during the exploratory portion of development because the total emission potential was below the 25 tons per year, permit threshold (BLM Dec 2004, Jan. 2005). For fixed source sites (compressor engines or turbines), utilized in the production phase, 18 air quality permits or Title V Operating Permits have been issued.</p> <p>As part of the Badger Hills POD, the ARMB modeled the cumulative impact from CBNG development. Their conclusion was, that the analysis conducted in the MT-FEIS is still representative of the cumulative impacts in the area defined in the MT-FEIS. The cumulative impacts would be in compliance with all of the air quality standards and PSD increments and thresholds for pollutant impact indicators for mandatory federal Class I PSD areas and sensitive lakes (BLM Dec. 2004).</p>
<p>4. VEGETATION COVER, QUANTITY AND QUALITY: Will vegetative communities be significantly impacted? Are any rare plants or cover types present?</p>	<p>[N] Impact to vegetation would be short term and minor. Disturbances from drilling, pipeline corridors, and compaction from equipment would reduce the amount of vegetation available for livestock or wildlife. Disturbances due to road construction and construction of impoundments would eliminate small areas of vegetation but for a longer time. Vegetative productivity would be restored through reclamation and elimination of vehicle traffic (BLM, Jan. 2005, Dec.2004, and Feb. 2004). All reclamation activities are to be conducted as soon as practical. Seeding of reclaimed areas shall use a prescribed seed mix. The operator shall follow the noxious weed control plan to control invasive species. The operator is required to reclaim and implement a storm water pollution prevention plan to control erosion and sediment migration from disturbed areas. This requirement is pursuant to the storm water authorizations issued under the storm water general discharge permit for construction activities.</p> <p>No threatened plants or vascular species of concern are known to inhabit the project area.</p>

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<p>5. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS: Is there substantial use of the area by important wildlife, birds or fish?</p>	<p>[N] It is anticipated that adherence to the established water quality standards will minimize changes to water quality; thus, direct impacts to macroinvertebrates, fish, amphibians and reptiles are also anticipated to be minimal. Indirect impacts to avian species, which subsequently forage on some of these species, are also anticipated to be minimal. The majority of the areas impacted by project development are upland grassland and grassland/shrub habitats adjacent to the riparian habitat associated with the river.</p>
<p>6. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES: Are any federally listed threatened or endangered species or identified habitat present? Any wetlands? Species of special concern?</p>	<p>[N]A summary of documented wildlife use of the area is attached (Attachment # 1). Bald eagles, a species listed by the USFWS as threatened, occupy the area associated with the Tongue River and the Tongue River Reservoir during migration, winter and the breeding seasons. A pair of bald eagles occupies a nesting territory located within the area to be affected by the proposed project (NE¼, NE¼, Section 33, N9S, R40E). Another active bald eagle nest is approximately four miles south of the Tongue River Reservoir, in Wyoming. Mitigation measures include, no surface occupancy within one half mile of historic (last seven years) or active nest sites or one half mile from any roost site. Active nest sites will be monitored between March 1st and July 15th. In addition, raptor safe structures will be utilized on new and existing facilities.</p> <p>In addition to the bald eagle, 17 species of concern are known to occupy the area of the proposed project. One amphibian, 2 reptile, 1 mammal, 2 avian, and 1 fish species of concern have been documented in the area adjacent to the proposed project. Activities within the areas frequented by these species, as well as other wildlife species, will be largely in areas that have been previously disturbed. Utility corridors are to be placed adjacent to existing county roads or two-track trails. The construction of the outfall structure is the only point impinging on the surface of the Tongue River proper, and disturbance related to this construction will be minimized.</p> <p>Use of the playa in Section 2, T9S, R39E by three species of concern has already been impacted by wastewater discharge. Additional discharge into this playa would further impact these and other wildlife.</p>
<p>7. HISTORICAL AND ARCHAEOLOGICAL SITES: Are any historical, archaeological or paleontological resources present?</p>	<p>[N] As a condition for BLM approval, the operator must conduct a cultural survey of the areas influenced by development. The operator has contracted a cultural survey provider to conduct assessments within the PODs. As per the BLM requirements they submitted their findings to the BLM for analysis (Fidelity, Jan. 2005, Dec. 2004, and Feb. 2004). The BLM (BLM Jan. 2005, Dec. 2004, and Feb. 2004), has developed mitigation measures for all sites impacted by development. In regards to cultural resources important to native Americans, the BLM directed contractors to pay special attention while conducting the survey to traditional cultural concerns such as springs, homesteads and plant communities. As a condition of approval the operator shall inform the BLM 48 hours prior to construction activities as the Northern Cheyenne Tribe may be contacted. The operator shall allow for a representative from the tribe to be present during construction on federal holdings. Any other cultural or paleontological resources discovered during construction must be reported immediately to the BLM. Construction may not resume until such</p>

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	time that the BLM as inspected and approved disturbances of the site. Given the BLM requirements there will be minimal impacts to cultural resources.
8. AESTHETICS: Is the project on a prominent topographic feature? Will it be visible from populated or scenic areas? Will there be excessive noise or light?	[N] Development of CBNG encompasses large tracts of land. Even though large areas are used in development; relatively small physical areas are occupied. The BOGC sets spacing for oil and gas development to maximize recovery while minimizing surface impact. Well spacing in the CX Field is set at 160-acre intervals. The operator is to use environmentally compatible colors to blend well houses into the landscape. With the use of concurrent reclamation and seeding with native species, visual impacts will be short term. Long term visual impacts will be realized by road and facility placement.
9. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY: Will the project use resources that are limited in the area? Are there other activities nearby that will affect the project? Will new or upgraded powerline or other energy source be needed)	[N] During the development phase no increases in environment resources will be realized. All activities will be temporary (construction). In the production phase limited electrical demand will be realized. Additional natural gas will become available for transmission to market. No adverse affect will be realized on this category.
10. IMPACTS ON OTHER ENVIRONMENTAL RESOURCES: Are there other activities nearby that will affect the project?	[N] Potential impacts may be realized to coal mining activities in the area. Dewatering of the shallow coals will reduce the amount of water available for internal consumption within the mines. The mine site may have to utilize outside sources, or water rights to obtain adequate volumes. Existing agreements utilizing produced water are in place.

IMPACTS ON THE HUMAN ENVIRONMENT	
11. HUMAN HEALTH AND SAFETY: Will this project add to health and safety risks in the area?	[N] No impact is expected in this area. Barring catastrophic events, no additional uses of these resources will be necessary. With development additional transportation facilities will be required; limited risk will be associated with the additional facilities. Each facility is small and constructed quickly with stringent engineering controls required to meet code.
12. INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION: Will the project add to or alter these activities?	[Y] Increased development will bring additional industrial sectors into the local area. With increased development, additional resources will become available within the marketplace. With increased development agricultural production may be potentially impacted (decreased carrying capacity). Should the permittee decide to utilize managed irrigation, incremental increases in production will be realized, in addition to increases in consumable amendments to the soils.
13. QUANTITY AND DISTRIBUTION	[Y] Impact to this area will be short term and minor. Additional employment opportunities will be realized during the construction and development phase

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EMPLOYMENT: Will the project create, move or eliminate jobs? If so, estimated number.	only. Total manpower requirements in the long term remain constant. Additional workforce in and around the area will not be required.
14. LOCAL AND STATE TAX BASE AND TAX REVENUES: Will the project create or eliminate tax revenue?	[Y] Development of CBNG resources will increase the revenue to federal, state, and local entities. Leasing of mineral rights will realize initial increases. Production of resources will add additional royalty and production taxes. Additional local activities will increase taxes and consumption in the local areas. By obtaining permits to allow discharges of produced water the operator will continue development, resulting in increased revenue at the federal, state, and local level.
15. DEMAND FOR GOVERNMENT SERVICES: Will substantial traffic be added to existing roads? Will other services (fire protection, police, schools, etc.) be needed?	[N] No impacts are anticipated in these areas. Any increases in traffic will be short term and minor during the construction phase. In the production phase, since no services are available locally, the workforce will be commuting to and from Sheridan WY. Issuing of these permits will allow the operator to continue development of the resources.
16. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS: Are there State, County, City, USFS, BLM, Tribal, etc. zoning or management plans in effect?	[N] No local ordinances or plans conflict with issuance of these permits. Stipulations contained in the permits require the operator to acquire all the necessary approvals or permits prior to commencing any activities.
17. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES: Are wilderness or recreational areas nearby or accessed through this tract? Is there recreational potential within the tract?	[N] No wilderness areas are near or within the project area. Minor impacts will be realized to recreational potential within the project due to development. Additional access in and around the area will allow for increased recreational opportunities in the area.
18. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING: Will the project add to the population and require additional housing?	[N] The development of CBNG from this action impacts a limited population base. The workforce associated with CBNG development in the Decker area commute from Sheridan WY. The Town of Sheridan has adequate housing to handle increases in the workforce due to this action.
19. SOCIAL STRUCTURES AND MORES: Is some disruption of native or traditional lifestyles or communities' possible?	[N] No impacts are expected in this area. During the project term no significant increase in population is expected. No transient workforce will integrate into the resident population. No additional social services will be necessary.
20. CULTURAL UNIQUENESS AND DIVERSITY: Will the action cause a shift in some unique quality of the area?	[N] No impacts are anticipated in this area. The workforce employed during construction and development are native to the area, and retain the uniqueness of the culture.
21. OTHER APPROPRIATE	

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SOCIAL AND ECONOMIC CIRCUMSTANCES:	[N] No impacts are anticipated in this area.
22(a). PRIVATE PROPERTY IMPACTS: Are we regulating the use of private property under a regulatory statute adopted pursuant to the police power of the state? (Property management, grants of financial assistance, and the exercise of the power of eminent domain are not within this category.) If not, no further analysis is required.	[N] Issuing the MPDES permits do not regulate the use of private property within the project area.
22(b). PRIVATE PROPERTY IMPACTS: Is the agency proposing to deny the application or condition the approval in a way that restricts the use of the regulated person's private property? If not, no further analysis is required.	[N]
22(c). PRIVATE PROPERTY IMPACTS: If the answer to 21(b) is affirmative, does the agency have legal discretion to impose or not impose the proposed restriction or discretion as to how the restriction will be imposed? If not, no further analysis is required. If so, the agency must determine if there are alternatives that would reduce, minimize or eliminate the restriction on the use of private property, and analyze such alternatives. The agency must disclose the potential costs of identified restrictions.	[N]

23. Description of and Impacts of other Alternatives Considered:

A. No Action: Under the “No Action” alternative, the Department would not issue MPDES permit MT0030724, Permit MT0030457 would remain in effect and allow the discharge of up to 1600 gpm of untreated wastewater. Any other discharges of produced water from CBNG development would need to be impounded away from state waters.

B. Approval with modification: The Department has tentatively decided to issue MPDES permits MT0030457 and MT0030724 to the operator of the CX Field. Under this alternative the permittee will be required to be compliant with all the terms and conditions identified in the permits. Discharges to the Tongue River would result in less impact to soils and wildlife habitat than impounding the wastewater on the surface. Should the operator fail to meet permit limits, the permit may be reopened and modified to provide additional protection to the receiving water. Enforcement actions may impose corrective measures

24. Summary of Magnitude and Significance of Potential Impacts: Issuance of the permits ensures that standards for water quality will be met. Standards are protective of beneficial uses. Therefore impacts are minor and non-significant.

25. Cumulative Effects: Cumulative Impacts have been analyzed as part of this EA. Based on the ambient conditions during the time of the analysis no cumulative impacts have been identified. If the ambient water quality changes appreciably, the permits may be reopened or reevaluated during the permit renewal period.

26. Preferred Action Alternative and Rationale: The Department recommends approving the permit issuance with the proposed effluent limitations. This action is preferred because the permit program provides a regulatory mechanism for protecting and improving water quality by applying permit limitations on the point source discharges.

Recommendation for Further Environmental Analysis:

☐ EIS ☐ More Detailed EA ☒ No Further Analysis

27. Public Involvement: This draft EA will be opened for public comment during a 45-day public comment period. It will be posted on the Department's web page at <http://www.deq.state.mt.ea.asp> or commentors may contact Dianne McKittrick at the Water Protection Bureau at (406) 444-2475. Public Hearings have been scheduled at Lame Deer, MT at 2:00 pm on June 1, 2005, at the Blessed Sacrament Catholic Church, and 6:30 pm at Colstrip MT on May 31, 2005 at the community library. For copies of the Draft EA or to submit comments, write or call the Montana Department of Environmental Quality, Water Protection Bureau, PO Box 200901, Helena MT 59620-0901, (406) 444-3080. Comments will be received for 45-day after the date of the signature below.

The Department maintains a list of persons who have expressed an interest in all environmental water quality related issues. The Department will send a copy of this document to all persons who have submitted their name, address, and telephone number to the Department for the purpose of being included on the water quality interested parties mailing list.

28. Persons and agencies consulted in the preparation of this analysis:
Patricia Potts, DEQ WPB, GWPCS
Chris Yde, DEQ IEMB,
Bruce Waage, DEQ IEMB

EA Checklist Prepared By:

James Lloyd
(Name)

April 22, 2005
Date

Approved By:

(Print: name & title)

Signature

Date

References:

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Fidelity Exploration and Production Company, Plan of Development, Master Surface Use Plan, Tongue River – Badger Hills Project, June 2003.

Fidelity Exploration and Production Company, Plan of Development, Tongue River- Dry Creek Project, March 2004.

Fidelity Exploration and Production Company, Plan of Development, Tongue River- Coal Creek Project April 2004.

Attachment 1

Wildlife

The uplands surrounding this project have been altered by extensive human developments, including farm and ranch operations, surface coal mining, CBM development and their associated roads, wells, pumping stations and power lines. Except for the agricultural areas, the wildlife habitats immediately bordering the Tongue River have not seen the same level of physical development as the upland areas on either side of the Tongue River.

Coal mining companies, private consulting firms and governmental agencies have conducted wildlife monitoring and inventory studies in the area for many years. Much of the information gathered has been used in surface coal mining permitting, land management planning processes, and more recently collected for CBM development and site specific Monitoring and Protection Plans (WMPP). Additional information is available from reports generated by the surface coal mines operated by Decker Coal Company and Spring Creek Coal Company. These mines, located in close proximity to the proposed project, have conducted extensive baseline wildlife surveys and annual monitoring in association with their permitting. These inventories/surveys include Threatened and Endangered species (T/E), including bald eagles and black-footed ferrets, and other high interest species such as raptors, sharp-tailed grouse, sage grouse, black-tailed prairie dogs, and mountain plovers.

The following general summary of wildlife distribution in the area of concern is based largely upon information obtained from annual wildlife monitoring reports submitted to Montana Department of Environmental Quality by Decker Coal Company and Spring Creek Coal Company, as well as from an environmental assessment prepared by the U.S. Bureau of Land Management (BLM, 2000).

Mule deer (*Odocoileus hemionus*) and white-tailed deer (*O. virginianus*) are common, yearlong residents of the area. During winter, populations tend to increase as animals migrate to more suitable habitats. The agricultural fields along the river receive increased use during the winter. Pronghorn (*Antilocapra americana*) are also yearlong residents; however, they tend to utilize the upland shrubland areas and don't tend to concentrate along the river bottoms.

Several species of raptors, including bald eagles (*Haliaeetus leucocphalus*), golden eagles (*Aquila chrysaetos*), osprey (*Pandion haliaetus*), red-tailed hawks (*Buteo jamaicensis*), prairie falcons (*Falco mexicanus*), turkey vultures (*Cathartes aura*) and American kestrels (*Falco sparverius*), nest on a variety of substrates. Bald eagles and osprey forage on fish from both the Tongue River and the Tongue River Reservoir. A variety of waterfowl, including the Canada goose (*Branta Canadensis*), mallard (*Anas platyrhynchos*), northern shoveler (*A. clypeata*), common goldeneye (*Bucephala clangula*), hooded merganser (*Lophodytes cucullatus*) and common merganser (*Mergus merganser*), and shorebirds – including sandpipers, long-billed dowitcher (*Limnodromus scolopaceus*), killdeer (*Charadrius vociferous*), and American avocet (*Recurvirostra americana*) – use the river, reservoir and associated shoreline areas during

migratory and breeding seasons, with several species of waterfowl wintering in the area. The riparian habitats adjacent to the river provide vegetation and structural diversity, which attracts a wide variety of songbirds. Because of the structural diversity and proximity to water these habitats support a wider variety of songbirds than the upland habitats. A great blue heron (*Ardea herodias*) and double-crested cormorant (*Phalacrocorax auritus*) rookery has been long established in the large cottonwoods (*Populus spp.*) at the south end of the Tongue River Reservoir. Several smaller rookeries have also established along the Tongue River; may be in response to the recent raising of the reservoir level. Ringed-necked pheasants (*Phasianus colchicus*), grey partridge (*Perdix perdix*) and turkeys (*Meleagris gallopavo*) inhabit the area adjacent to the river, while sage grouse (*Centrocercus urophasianus*) and sharp-tailed grouse (*Tympanuchus phasianellus*) are found within the upland areas.

A BLM (2005) reptile and amphibian inventory and study encompassed the project area and evaluated existing habitat, historical records, published literature, and consulted with local herpetologists (Maxell et al 2003, Maxell 2004, pers. comm.). Six species of amphibians and thirteen species of reptiles were determined to occur or potentially occur in the vicinity of the project area. These include the tiger salamander (*Ambystoma tigrinum*), plains spadefoot (*Spea bombifrons*), Great Plains toad (*Bufo cognatus*), Woodhouse's toad (*Bufo woodhousii*), boreal chorus frog (*Pseudacris maculate*), northern leopard frog (*Rana pipiens*), spiny softshell (*Apalone spinifera*), snapping turtle (*Chelydra serpentine*), painted turtle (*Chrysemys picta*), greater short horned lizard (*Phrynosoma herandesi*), common sagebrush lizard (*Sceloporus graciosus*), terrestrial gartersnake (*Thamnophis elegans*), common garter snake (*Thamnophis sirtalis*), plains gartersnake (*Heterodon nasicus*), Eastern racer (*Coluber constrictor*), milksnake (*Lampropeltis triangulum*), and prairie rattlesnake (*Crotalus viridis*). Of these, three amphibians and six reptiles have special status rankings by either the BLM, U.S. Forest Service (USFS), or MTNHP (Table 1). Currently, the U.S. Fish and Wildlife Service lists no herptile species within Montana as threatened or endangered.

Currently a large playa located in Section 2, T9S, R39E is being used as a waste water discharge storage area. It has been assumed that since this is a small closed basin potential impacts would be minimal. Playas, however, are often important wildlife habitats. During annual wildlife monitoring conducted by Spring Creek Coal Company (summarized in SCCC 2004) it has been documented that at least three species of special concern utilized the playa prior to water discharge inundating at least part of the area. Two active sage grouse leks (one located on the playa and one approximately ¼ mile to the north) have been monitored for a number of years. A black-tailed prairie dog colony was present on the playa prior to inundation. These animals have adjusted somewhat to the disturbance; however, an impact exists. Two active burrowing owl nests were present in the prairie dog colony, with one of the nests active until 2001. Neither nest site has been active since 2001. In addition, a sharp-tailed grouse lek was present on the south side of the playa through the spring of 2001. Replacing the viability of the playa to support a diversity of wildlife species, such as sage grouse, sharp-tailed grouse, black-tailed prairie dogs, and burrowing owls, would alleviate some of the impacts that CBM production has had on wildlife in the area.

Threatened and Endangered Species

The bald eagle, currently listed as a Threatened species by the USFWS, is the only wildlife T/E species to be observed near the project area. Bald eagles are observed throughout the year in the vicinity of the Tongue River. Numerous bald eagles migrate through the area, while others winter along the Tongue River foraging on fish, waterfowl and carrion (mostly winter- or vehicle-killed big game animals wintering in the adjacent uplands). Four active bald eagle nests are located along the Tongue River from Sheridan, Wyoming to the Tongue River Reservoir. The other three are located in Wyoming, upstream of the proposed project. A fifth bald eagle nest/territory is located approximately eight air miles north of the Tongue River Dam. All the nests are located in the riparian habitat associated with the Tongue River. The one active nest – including the foraging area associated with the nest – would be within the area impacted by the construction of water discharge structures and the proposed water discharges (NE¼, NE¼, Section 33, T9S, R40E).

Species of Special Concern [Montana Natural Heritage Program (2004)]

Table 1 summarizes the species of special concern that have been identified by the Montana Natural Heritage Program (MTNHP 2004).

¹ Common Name	¹ Scientific Name	² MNHP Rank	³ USFWS Status	⁴ USFS Status	⁵ BLM Status
<u>Amphibians</u>					
Plains spadefoot	<i>Spea bombifrons</i>	S3			
Great Plains toad ⁶	<i>Bufo cognatus</i>	S2			
Northern leopard frog	<i>Rana pipiens</i>	S3		S	
<u>Reptiles</u>					
Spiny softshell	<i>Apalone spinifera</i>	S3			S
Snapping turtle	<i>Chelydra serpentina</i>	S3			S
Greater short-horned lizard	<i>Phrynosoma hernandesi</i>	S3			
Common sagebrush lizard	<i>Sceloporus graciosus</i>	S3			
Western hog-nosed snake	<i>Heterodon nasicus</i>	S2			
Milksnake	<i>Lampropeltis triangulum</i>	S2			
<u>Mammal</u>					
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>	S3	C		
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	S2		S	S

Birds					
Bald Eagle	<i>Haliaeetus leucocephalus</i>	S3B,S3N	T		
Burrowing Owl	<i>Athene cunicularia</i>	S2B		S	S
Greater Sage Grouse	<i>Centrocercus urophasianus</i>	S3		S	S
Brewer's Sparrow	<i>Spizella breweri</i>	S2B			
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	S3B			
American White Pelican	<i>Pelecanus erythrorhynchos</i>	S3B			
Fish					
Sauger	<i>Stizostedion canadense</i>	S2			

- 1 Scientific and common names according to MTNHP 2004.
- 2 Montana Natural Heritage Program state ranking as determined by MTNHP and MFWP biologists: S2 = imperiled – very limited and/or declining numbers, range and/or habitat; S3 = Potentially at risk because of limited and/or declining numbers, range and/or habitat, may be locally abundant. B/N = State rank modifiers indicating the breeding status for a migratory species; B = Breeding, N = Non-breeding.
- 3 US Fish and Wildlife Service Status: T = Threatened; E = Endangered; C = Candidate (species for which the USFWS has sufficient information on biological status and threats to propose listing as threatened or endangered).
- 4 USDA, US Forest Service Region 1 Status: (S) = USFS Sensitive Species.
- 5 USDI, Bureau of Land Management Status: S = BLM Sensitive Species.
- 6 The (BLM 2005) study documented one Great Plains toad observation; an auditory detection tallied while performing night road-driving surveys on May 19, 2004. The distinct call was heard across the Decker Coal mine exclusion area from a point along Decker Road.

Potential Impacts

It is anticipated that both direct and indirect impacts will occur due to the implementation of the proposed project. Construction activities during the nesting season could cause the bald eagle pair occupying the territory upstream of the Tongue River Reservoir to abandon the territory. The U.S. Fish and Wildlife Service requires a ½ mile buffer around the nest site to be established, limiting new activity during the nesting period (approximately March 1 through July 15 or until the young fledge). Reduction in water quality could also affect the availability and distribution of macroinvertebrates and fish, affecting the availability of food for other species (e.g. common merganser, bald eagle, spiny softshell, snapping turtle). It is anticipated, however, that the water quality standards that are in place will minimize the impacts to these species.

A BLM report states, “No evident relationship between water quality parameters and amphibian and reptile detections is apparent from the data collected. Higher pH and EC values for certain sample sites did not appear to preclude the presence of herptiles. However, the six sites that were chosen as exhibiting particularly high-quality structural or vegetative habitat characteristics, such as shallows and good vegetative cover, exhibited the highest diversity of aquatic species, the widest range of life stages, and the most individuals. Conversely, sites that

were lacking these high quality characteristics produced fewer, and sometimes zero, herptile observations. This suggests that wetland structure and vegetative cover may currently be as strong an indicator of herptile presence and population viability as water quality parameters within the Study Area. However, insufficient water quality and quantity data was collected to assess any effects of water quality on herptiles within the study area” (BLM, 2005).

Macroinvertebrates are an important link in the food chain of river and riparian systems; they provide food sources for fish, reptiles and amphibians living in the Tongue River, Tongue River Reservoir and the associated wetland areas. Environmental changes to water chemistry, water volumes, and temperature can alter macroinvertebrate populations and species makeup, resulting in direct consequences for fish, reptiles and amphibians. A reduction in fish and amphibians results in a reduction in the availability of forage for several bird species (e.g. bald eagle, osprey, common merganser, great blue heron, black-crowned night-heron, and pelicans). Complying with Montana water quality discharge standards should minimize impacts to aquatic life forms. If reductions in aquatic live forms are noted, additional studies and/or monitoring will be needed to determine the extent of the impacts and develop mitigation measures.

Protection

Wildlife protection for this project will follow the guidance documents and requirements outlined in the CBNG Programmatic Wildlife Monitoring and Protection Plan for the Montana Statewide EIS, BLM (2003).

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